

primary oxidizing agent, wherein the content of aldehyde groups is more than 50 $\mu\text{mol/g}$ fibrous material (as a dry content based on DIN EN 20638).

23. (New) A method according to claim 22, wherein the content of aldehyde groups is more than 100 $\mu\text{mol/g}$ fibrous material.

24. (New) A method according to claim 22, wherein the content of aldehyde groups is more than 150 $\mu\text{mol/g}$ fibrous material.

25. (New) A method according to claim 22, wherein the nitroxy compound is a sterically hindered, organic non-conjugated nitroxy compound.

26. (New) A method according to claim 22, wherein the nitroxy compound is a 2,2,6,6-tetramethylpiperidiny1-1-oxyl (TEMPO) optionally substituted in position 4.

27. (New) A method according to claim 22, wherein said primary oxidizing agent is a hypohalite, ozone, a peracid, a metal-containing oxidizing agent, or an oxidase.

28. (New) A method according to claim 27, wherein peracid is used in the presence of a catalytic amount of halide at a pH of 5-11 for the purpose of oxidation.

29. (New) A method according to claim 27, wherein oxidation is performed using hypohalite or ozone as a primary oxidizing agent and a 4-hydroxy-, 4-amino- or 4-amido-substituted 2,2,6,6-tetramethylpiperidiny1-1-oxyl at a pH of 1-7.

30. (New) A method according to claim 27, wherein oxidation is performed using MnO_2 as a primary oxidizing agent at a pH of 2-8.

31. (New) A method according to claim 22, wherein oxidation is performed stoichiometrically using 4-acetamido-2,2,6,6-tetramethylpiperidiny1-1-oxyl (4-acetamido TEMPO) at an acidic pH of < 7 .

32. (New) A cellulose-containing fibrous material obtained by the method of claim 22.

33. (New) A cellulose-containing fibrous material according to claim 32, wherein the content of aldehyde groups is more than $100 \mu\text{mol/g}$ fibrous material.

34. (New) A cellulose-containing fibrous material according to claim 32, wherein the content of aldehyde groups is more than $150 \mu\text{mol/g}$ fibrous material.

35. (New) A cellulose-containing fibrous material according to claim 22, wherein the surfaces of the fibrous material used for oxidation are activated.

36. (New) A paper or nonwoven comprising said cellulose-containing fibrous material according to claim 32.

37. (New) A paper according to claim 36, wherein said paper is a tissue paper.

38. (New) A paper or nonwoven according to claim 36, wherein said paper or nonwoven exhibits a relative wet strength (rel. WS) of more than 10% calculated as follows:


$$\text{rel. WS} = \text{BSwet}/\text{BSdry}$$

wherein BSwet is the width-related breaking strength of the wet sample strip as measured according to DIN ISO 3781 and BSdry is the width-related breaking strength of the dry sample strip as measured according to DIN EN ISO 1924-2.

39. (New) A paper or nonwoven product comprising at least one ply of said paper or nonwoven according to claim 36.

40. (New) A paper product according to claim 39, wherein said paper product is a tissue product.

41. (New) A tissue product according to claim 40, wherein said tissue product is a cleaning wipe, sanitary product, paper handkerchief, household towel, towel, cloth for facial use, napkin/serviette, bed linen, or a garment.



42. (New) A method of producing a paper or nonwoven, comprising:
oxidizing the hydroxy groups at the C(6) of glucose units of the cellulose in a
cellulose-containing fibrous material to aldehyde and carboxy groups with a nitroxy
compound optionally in combination with a primary oxidizing agent, wherein the
content of aldehyde groups is more than 50 $\mu\text{mol/g}$ fibrous material (as a dry
content based on DIN EN 20638);
wet laying said oxidized cellulose-containing fibrous material;
pressing the wet-laid fibrous material; and
drying the pressed fibrous material.

43. (New) A method according to claim 42, further comprising a pre-drying
step based on through air drying (TAD) technology followed by a creping step and wherein
said paper is a tissue paper.

44. (New) A method according to claim 43, further comprising a wet rush
transfer step prior to the drying step and wherein said paper is a tissue paper.

45. (New) A method according to claim 42, wherein said paper or nonwoven is
further processed into a paper, tissue or nonwoven product using at least one process step
selected from the group consisting of cutting to size, producing a plurality of plies,
producing mechanical ply adhesion, volumetric and structural embossing, applying

*off
control*

adhesive, folding, imprinting, perforating, applying lotions, calendering, stacking, and
rolling up.

